UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2001/01315

July 17, 2002

Mr. Lawrence C. Evans
US Army Corps of Engineers
Regulatory Branch, CENWP-OP-G
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Endangered Species Act Informal Section 7 Consultation and Magnuson-Stevens Act Essential Fish Habitat Consultation for the Haynes Drainage District Dredging Project at Coos Bay, Coos County, Oregon (Corps No. 2001-00241).

Dear Mr. Evans:

Enclosed is the biological opinion (Opinion) prepared by the National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of permitting the proposed Haynes Drainage District dredging project in Coos County, Oregon. In this Opinion, NOAA Fisheries concluded that the proposed action is not likely to jeopardize the continued existence of ESA-listed Oregon Coast coho salmon. As required by section 7 of the ESA, NOAA Fisheries included reasonable and prudent measures with nondiscretionary terms and conditions that NOAA Fisheries believes are necessary to minimize the potential for incidental take associated with this action.

This Opinion also serves as consultation on essential fish habitat pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR part 600).

If you have any questions regarding this consultation, please contact Frank Bird of my staff in the Oregon Habitat Branch at 541.957.3383.

Sincerely,

for Michael R Course

D. Robert Lohn
Regional Administrator

cc: Mike McCabe, ODSL
Michael Gray, ODFW
Steve Wille, USFWS

Endangered Species Act - Section 7 Consultation
&
Magnuson-Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL OPINION

Haynes Drainage Ditch Dredging Project
Coos County, Oregon
(Corps No. 2001-00241)

Agency:	U. S. Army Corps of Engineers
Consultation Conducted By:	NOAA Fisheries, Northwest Region
Date Issued:	July 17, 2002
Issued by:	for _____ D. Robert Lohn Regional Administrator
Refer to:	**2001/01315**

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1. ENDANGERED SPECIES ACT

1.1 Background

On April 24, 2001, the National Marine Fisheries Service (NOAA Fisheries) received a biological assessment (BA) and a request from the U. S. Army Corps of Engineers (Corps) for Endangered Species Act (ESA) Section 7 informal consultation for the Haynes Drainage Ditch Dredging Project in Coos County, Oregon. The project includes dredging 2.1 miles of Palouse Creek and scattered side drainage channels located in adjacent agricultural pastures. The project area is located at the head of Haynes Inlet, a bay within Coos Bay.

Initial review of the BA by NOAA Fisheries staff, discussions with Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Environmental Quality (ODEQ), local entities, and numerous site visits in 2001, resulted in NOAA Fisheries elevating the initial informal designation to a likely to adversely affect (LAA) determination. The Corps was informed of this determination in a February 15, 2002, letter in which we provided our rationale for the change. A meeting with the applicants, and a review of ODFW data on the affected stream reaches was conducted on May 30, 2002. At this meeting, NOAA Fisheries explained the consultation process to the applicants and indicated the likely outcome of consultation. This biological opinion (Opinion) is based on the information presented in the BA and derived from discussions with the applicant, Corps, ODFW, ODEQ, others, and numerous site visits.

The Corps has determined that Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*) is likely to occur within the project area. The OC coho salmon were listed as threatened under the ESA on August 10, 1998 (63 FR 42587), and protective regulations were issued under section 4(d) of the Endangered Species Act (ESA) on July 10, 2000 (65 FR 42422). The Corps, using methods described in *Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NMFS 1996), determined that the proposed action is likely to adversely affect OC coho salmon.

This Opinion is based on the information presented in the BA and other sources to obtain additional information and clarity. The objective of this Opinion is to determine whether the actions to dredge Palouse Creek and adjoining drainage ditches are likely to jeopardize the continued existence of the OC coho salmon. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

1.2 Proposed Action

1.2.1 Project Purpose

This project is designed to reestablish drainage to pastures along Palouse Creek. The adjoining pastures are used for grazing and hay production by 26 land owners. The landowners make up the Haynes Drainage District. Palouse Creek channel has been used for almost 100 years for this purpose. The artificial channel that is now lower Palouse Creek has aggraded in the last 75 years

to the point that drainage from adjoining pastures no longer occurs for most of the year. Because of the location of this reach of stream in the intertidal zone of the drainage, excavating the existing channel to a depth of four feet is the only way to achieve desired drainage patterns.

1.2.2 Palouse Creek Dredging

The proposed action is the removal of up to 46,046 cubic yards of accumulated sediment from 2.1 miles of Palouse Creek, and five miles of adjoining drainage ditches, over a five-year period. Removal would be accomplished with an excavator track-hoe working from an elevated 30-foot-wide dike, or adjacent stream bank if no dike is present. Where appropriate, excavated materials would be placed on the dike to dry for later distribution, or spread immediately in nearby wetland pastures to a depth of less than four inches. Excavated materials spread after drying would be placed on pastures in a similar manner. The excavation would affect only one bank and its vegetation and the streambed bottom. The excavated channel would be to a depth of four feet and a width of 20 feet. Excavation would be done in the most efficient way to minimize downstream sedimentation during dredging.

Examination of ODFW files on stream surveys and conversations with ODFW and the landowners indicate bottom materials are sand and mud. Most riparian vegetation is canary reed grass, an imported noxious weed found in intertidal habitats, with occasional patches of willows scattered along the banks. In addition to the stream dredging, the Corps and ODEQ has requested that the applicants install five sediment basins, 30 feet wide by 5 feet deep, within the stream channel to collect sediment moving through the system, and to provide juvenile coho salmon winter rearing habitats. These sediment ponds would be dredged as frequently as annually, during the ODFW in-water work window, with a tracked excavator and hauled by dump truck to disposal sites on upland pastures, thus maintaining a lower level of instream sediment accumulation.

The Corps would require the applicants to conduct the dredging in a manner which would minimize impacts to aquatic organisms and their habitats, including: (1) Requiring work only within the ODFW approved in-water work period when stream flows would be lowest; (2) requiring the use of land-based equipment for sediment removal and from only one side of the channel; (3) requiring the minimization of woody vegetation removal; (4) requiring the replacement of woody riparian vegetation through streamside willow plantings; (5) requiring the spreading of removed sediments to a depth of less than four inches; (6) requiring the construction of five sediment settling basins along the length of the dredged reach, with annual dredging of the ponds during the in-water work window to minimize annual sediment buildup in the project stream reach; and (7) requiring the limitation of dredging to a single pass per channel segment, except for the sediment collection ponds, over the five-year life of the permit.

1.3 Biological Information

Although limited data are available to assess population numbers or trends, NOAA Fisheries believes that all OC coho salmon stocks comprising the OC coho salmon evolutionarily significant unit (ESU) are depressed, relative to past abundance. The OC coho salmon ESU is identified as all naturally-spawned populations of coho salmon in coastal streams south of the Columbia River and north of Cape Blanco (60 FR 38011, July 25, 1995). Biological information for OC coho salmon can be found in species status assessments by NOAA Fisheries (Weitkamp *et al.* 1995) and by ODFW (Nickelson *et al.* 1992).

Abundance of wild OC coho salmon spawners in Oregon coastal streams declined from 1965 to 1975, and has fluctuated at a low level since then (Nickelson *et al.* 1992). Spawning escapements for this ESU may be less than 5 percent than that of the early 1900s. Contemporary production of OC coho salmon may be less than 10 percent of historic production (Nickelson *et al.* 1992). Average spawner abundance has been relatively constant since the late 1970s, but pre-harvest abundance has declined. Average recruits-per-spawner may also be declining. The OC coho salmon ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al.* 1995).

OC coho salmon are widely distributed in the streams draining into Coos Bay, typically spawning and rearing in tributaries of Coos Bay, including upper reaches of Palouse Creek (ODFW files, Charleston, Oregon). Adult OC coho salmon likely would pass through or near the proposed project sites during October through early December, during their spawning migration, and spawn through January. Juvenile coho salmon would typically rear in the upper reaches of Palouse Creek and upon smoltification would outmigrate through or near the proposed project site in March through early June to rear in the Pacific Ocean. The immediate project area serves as a migration corridor for both adult and juvenile OC coho salmon; it does not provide holding, spawning, or rearing habitat for this species, as the area remains highly impacted from prior dredging and other activities. According to ODFW, no adult OC coho salmon will be present in the general action area during the proposed work, and juveniles will only pass through the system. Due to shallow waters, warm summer water temperatures, and the salinities created by intertidal influence, coho salmon are not expected to be within the project area during the ODFW in-water work period (July 1 to September 15).

1.4 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat (none designated for this species in this area). This analysis involves the definition of the biological requirements and current status of the listed species, and the evaluation of the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action, and the extent to which the proposed action impairs the function of essential biological elements necessary for juvenile and adult migration, and juvenile rearing of OC coho salmon.

1.4.1 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed coho salmon is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list OC coho salmon for ESA protection and also considers new available data that is relevant to the determination. The relevant biological requirements are those necessary for OC coho salmon to survive and recover to naturally-reproducing population levels at which protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

Although limited data are available to assess population numbers or trends, NOAA Fisheries believes that all OC coho salmon stocks comprising the OC coho salmon ESU are depressed relative to past abundance. The OC coho salmon ESU is identified as all naturally-spawned populations of coho salmon in coastal streams south of the Columbia River and north of Cape Blanco (60 FR 38011, July 25, 1995). Biological information for OC coho salmon can be found in species status assessments by NOAA Fisheries (Weitkamp *et al.* 1995) and by ODFW (Nickelson *et al.* 1992).

Abundance of wild OC coho salmon spawners in Oregon coastal streams declined during the period 1965 to 1975 and has fluctuated at a low level since then (Nickelson *et al.* 1992). Spawning escapements for this ESU may be less than 5 percent of that of the early 1900s. Contemporary production of OC coho salmon may be less than 10 percent of the historic production (Nickelson *et al.* 1992). Average spawner abundance has been relatively constant since the late 1970s, but pre-harvest abundance has declined, although this is not consistent across their range. Average recruits-per-spawner may also be declining. The OC coho salmon

ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al.* 1995).

For this consultation, biological requirements are improved habitat characteristics that function to support successful migration and holding in the action area. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed. The Coos Bay watershed serves as freshwater riverine spawning habitat and year-round juvenile rearing habitat, as well as estuarine migration and rearing habitat. Palouse Creek is used as spawning, migration and rearing habitat, although the reaches affected by the dredging action are only used for migration (ODFW 1951, 1996, 1969). Within a one-mile sample reach of Palouse Creek, OC coho salmon counts from 1958-1993 indicate a range of 19-84 adults, including jacks (ODFW 1993). Current escapement counts are similar to the earliest counts, although numbers appear to be increasing.

1.4.2 Environmental Baseline

The current range-wide status of the identified ESU may be found in Nickelson *et al.* (1992) and Weitkamp *et. al* (1995). The identified action will occur within the range of OC coho salmon. The action area is the area that is directly and indirectly affected by the action. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect effects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. As such, the action area for the proposed activity includes the immediate watershed where the dredging will occur, and those areas upstream and downstream that may reasonably be affected. For the purposes of this Opinion, the action area is defined as from the upper most reach of dredging, located at stream mile 2.8, downstream to stream mile 0.7, which is 0.7 miles from the tidegate, located where Palouse Creek enters Haynes Inlet. In addition, the action area includes five miles of drainage ditches and side channels accessible to OC coho salmon from the dredged stream reach.

The dominant land use in the Palouse Creek watershed is residential, private agriculture, and forestry. This reach of Palouse Creek is water-deficient during the construction period, primarily due to the seasonal pattern of rainfall. The ODEQ has listed Palouse Creek on their 303(d) List of Water Quality Limited Water Bodies. The ODEQ listed water quality problems identified within the project area include bacteria, sedimentation, and summer temperature (ODEQ 1999).

Based on the best available information regarding the current status of OC coho salmon range-wide, the population status, trends, genetics, and the poor environmental baseline conditions within the action area, NOAA Fisheries concludes that the biological requirements of OC coho salmon are not currently being met. Degraded habitat, resulting from agricultural practices, forestry practices, road building, and residential construction, indicate many aquatic habitat indicators are not properly functioning within the Palouse Creek watershed. Actions that do not

maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of OC coho salmon.

1.5 Analysis of Effects

1.5.1 Effects of Proposed Action

Direct harm may occur to juvenile OC coho salmon which may be present in the action area due to project in-water activities. Should juvenile OC coho salmon be present, using mechanized machinery in the water has, at the minimum, the potential for disturbing these fish and causing their displacement from the immediate work area. Additional risk is also possible due to interaction of individual fish with the excavator bucket and exposure to contaminants from the excavator. Excavation of the stream channel is expected to result in increases in turbidity that may also result in the displacement of individuals due to the high concentration of suspended sediments, although the downstream stepped approach for dredging, low flows, and twice-daily tidal flushing should minimize downstream sedimentation effects. Disturbance and harassment of individual juvenile OC coho salmon due to heavy equipment is expected to be limited to within the immediate project site. Any juveniles outside of this described area are not expected to be affected by equipment operation. Downstream effects of turbidity and hazardous materials could be expected to extend downstream 2,500 feet. Beyond this distance, turbidity levels are expected to be negligible. Hazardous material spills require immediate control in order to limit the extent of impacts. This problem must be addressed through proactive practices, such as sorbent booms and other control measures available during construction.

Indirect effects are expected to persist over the long term due to habitat alteration. The essential features potentially affected by this project are: Substrate, water quality (turbidity, hazardous substances), cover/shelter, food, and space. The proposed action includes excavating the stream substrate. This excavation will have a localized effect on macroinvertebrates (food) and channel substrate (substrate, cover/shelter, space). This effect is expected to be minimal as the substrate is entirely mud and sand and macroinvertebrate populations are low and simplified. Hynes (1970) described the controlling factors of macroinvertebrate populations in running waters. Substrate size is an important component related to the spaces created between particles. If substrate is too small or too large, space may be reduced, therefore reducing “living area”. A much reduced substrate size is expressed in Palouse Creek in the mud and sand substrate, a habitat type providing little juvenile OC coho salmon benefit. OC coho salmon utilize Palouse Creek for spawning, but this only occurs in upper reaches, well above the dredging area. Spawning substrate is a nonexistent component of this project area.

Streambank and channel modification, such as channel deepening and widening, riparian vegetation removal, and scalping of one bank, is considered habitat degradation. In addition, the storing of sediments on the dike for later distribution will continue the disturbed nature of the bank and delay regeneration of vegetation. Bioengineered bank protection through willow plantings and the natural grass regeneration that occurs quickly in this environment provides a

certain amount of fish habitat benefit, but only if it is allowed to occur without further disturbance.

Hazardous materials, fertilizers, and post-project sediment erosion are additional potential concerns with this project. Hazardous materials from fuel spills and equipment failure are a concern. Operation of excavators requires the use of fuel, hydraulic fluid and lubricants, which, if spilled into the bed or channel of a water body or into the adjacent riparian zone of a water body during project construction, could injure or kill aquatic organisms. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain polycyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal as well as acute and chronic sublethal effects to aquatic organisms (Neff 1985). Post-project erosion can result in a chronic sediment source until revegetation occurs. Disturbance of the already erosive bank may increase erosion without proper vegetation recovery and monitoring.

The applicants and ODFW anticipate that completion of the dredging project may provide benefits to OC coho salmon by increasing habitat quality through channel deepening. The channel will go from four inches to four feet, which is anticipated to provide increased temperature moderation in summer months, which may increase summer use of the upper parts of this reach, above constraining salinities. This could also work to reduce the bacterial loading of this reach, an ODEQ 303(d) listed parameter (ODEQ 1999). In addition, the sediment basins proposed by ODEQ to collect sediment, and agreed to by the applicants, should reduce the need to redredge the entire reach on a frequent basis. Sediment basin cleanout on an annual basis will also produce major reductions in sedimentation within the project reach.

1.5.2 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The action area is defined as Palouse Creek between stream miles 0.7 and 2.8, and the adjoining drainage ditches.

Non-federal activities within the action area are expected to remain about the same as they currently exist. Thus, NOAA Fisheries assumes that future private and State actions will continue within the action area, but at current minimal levels. NOAA Fisheries assumes that future federal projects in the Palouse Creek watershed will be reviewed through separate section 7 consultation processes and therefore are not considered cumulative effects.

1.6 Conclusion

NOAA Fisheries has determined that, when the effects of the Corps's proposed action (permitting the proposed dredging action in Palouse Creek) are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of OC coho salmon. These conclusions were based on the following

considerations: (1) All in-water work and other construction activities within Palouse Creek will take place according to ODFW guidelines for timing of in-water work to protect fish and wildlife resources; (2) instream work conservation measures designed to minimize sedimentation effects will be in place to avoid or minimize adverse affects to water quality; (3) sediment collection basins will be constructed to collect sediment moving through the dredged reaches, and will be used to periodically remove instream sediment to reduce the frequency of all inclusive reach dredging; and (4) streambanks and riparian areas disturbed by dredging will be planted with native woody vegetation. Thus, the proposed action is not expected to impair properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning condition essential to the long-term survival and recovery at the population or ESU level.

1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. NOAA Fisheries believes the following conservation recommendation is consistent with these obligations and therefore should be implemented by the Corps:

The Corps should work with the Oregon Division of State to encourage steps by landowners to restore former or existing degraded tidal and near-tidal stream channels and wetlands. When direct onsite restoration by individual landowners is not practical or possible, the Corps should condition actions which adversely alter degraded stream channels and wetlands so that restoration or enhancement of comparable amounts of off-site tidal or near-tidal stream channels and wetlands is required. Possible on-site and off-site measures, used singly or in combination, include:

Removal or modification of tidegates. Prior to the construction of tidegates, tidal wetlands were subject to regular inundation which allowed the exchange of nutrients. If tidegates cannot be removed, fish passage benefits may be gained through replacement of existing gates with ones of lighter construction (such as aluminum) or using different designs that would allow the gates to be open for longer periods of time.

Enrollment of acreage in the U.S. Department of Agriculture's Conservation Reserve Enhancement Program (CREP) or Wetlands Reserve Program, participation in the Oregon Coastal Salmon Initiative, and/or projects through local watershed councils or other federal, state, and local programs which provide monetary or other incentives to agricultural landowners to protect and/or restore wetlands and other high-value fish and wildlife habitat.
Restoration of stream meanders and/or construction of setback levees. Because of their location and decreased sediment transport, streams which have been straightened and are confined by adjacent levees to the relatively high-elevation margins of floodplains are prone to overtopping

into the lower-elevation areas of the floodplains where the streams once meandered. The restoration of meandering stream channels in the lower-elevation portions of the floodplains could restore substantial OC coho salmon habitat and may even minimize the amount of pasture land typically flooded. Another alternative may be to construct new levees to exclude the stream channels from much of the floodplain, but to build the levees a substantial distance away from the existing or reconfigured stream channels so as to allow space for the streams to meander within the new floodplain. Even without direct stream channel manipulation, over time, better-functioning instream and off-channel OC coho salmon habitat should develop, especially if riparian vegetation is planted, maintained, and protected. In addition to the benefit to OC coho salmon habitat, the setback levees should better confine flooding (resulting in dryer pastures), while the setback levees and new floodplains would be available for grazing much of the year.

1.8 Reinitiation of Consultation

As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained or is authorized by law and if: (1) The amount or extent of incidental take is exceeded, (2) new information reveals effects of the agency action that may affect listed species in a manner or to an extent not considered in this Opinion, (3) the agency action is subsequently modified in a manner that causes an effect to the listed species not considered in this Opinion, or (4) a new species is listed or critical habitat is designated that may be affected by the action. In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending reinitiation of consultation.

2. INCIDENTAL TAKE STATEMENT

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species to by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1 Amount and Extent of the Take

NOAA Fisheries anticipates that the action covered by this Opinion is reasonably certain to result in incidental take of OC coho salmon because of detrimental effects from sediment pulses (non-lethal) and the slight possibility of juvenile presence in the vicinity of the project site during in-water work. NOAA Fisheries expects the possibility exists for incidental take of up to 20 juvenile coho salmon during the dredging operation resulting from direct contact with the excavator and its contents. Take resulting from the effects of other project actions covered by this Opinion is largely unquantifiable in the short term and not expected to be measurable in the long term. The extent of take is limited to the action area.

2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The Corps has the continuing duty to regulate the activities covered in this incidental take statement. If the Corps fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

The Palouse Creek Dredging Project includes a set of "conservation measures" designed to minimize take of listed species. These measures were developed in concert with the Corps and the applicants in a series of meetings and telephone calls, and appear below. In addition, the below reasonable and prudent measures and terms and conditions were also developed in concert with the Corps and the applicants. Specific measures for in-water dredging and bank work, erosion control, hazardous materials, and site-specific conservation measures are included.

NOAA Fisheries believes that the following reasonable and prudent measures along with conservation measures described in the BA are necessary and appropriate to minimize the likelihood of take of listed fish resulting from implementation of this Opinion. These reasonable and prudent measures would also minimize adverse effects to habitat.

The Corps shall:

1. Minimize the likelihood of incidental take associated with adverse effects to stream-associated wetland, riparian and instream habitats.

2. Minimize the likelihood of incidental take from excavation activities in or near watercourses by implementing pollution and erosion control measures.

3. Minimize the likelihood of incidental take associated with instream work by restricting work to recommended in-water work periods.

4. Monitor the effectiveness of the proposed conservation measures in minimizing incidental take and report to NOAA Fisheries.

2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1 (adverse effects to stream-associated wetland, riparian and instream habitats), the Corps shall ensure that:
    a. Excavation impacts will be confined to the minimum area necessary to complete the project.
        i. All dredging within Palouse Creek will occur from the downstream end of the project to allow sediment to settle in deepened stream reaches and to minimize sedimentation in downstream reaches.
        ii. All sediment and vegetation materials removed from Palouse Creek and associated drainage ditches must be placed in locations where it cannot enter streams, wetlands, or other water bodies, and must be dried before final placement.
        iii. The work shall not cause turbidity of the affected waters to exceed 10% over natural background turbidity 100 feet downstream of the work point.
        iv. All dredge spoils placed on agricultural lands must be spread to a depth of four inches, or less.
        v. Five sediment basins will be constructed along the 2.1 mile reach to provide sediment detention basins that can be used to collect instream sediment for annual removal, thus retarding sedimentation rates in the bulk of Palouse Creek. Sediment removed from these ponds will be treated according to these terms and conditions.
    b. Site restoration, including protection of bare earth by seeding, planting, mulching and fertilizing, is done in the following manner.
        i. Minimize stream bank vegetation removal during dredging. All damaged areas will be restored to pre-work conditions including restoration of original streambank lines, and contours.
        ii. Disturbed areas will be planted with native vegetation specific to the project vicinity, and will comprise a diverse assemblage of species. Planting should occur when greatest expectation of survival will occur.
        iii. Plantings will be arranged randomly within the revegetation area.
        iv. No herbicide application will occur within 90 meters of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.
        v. No surface application of fertilizer will be used within 15 meters of any stream channel as part of this permitted action.

vi. Plantings will achieve an 80 percent survival success after three years. If success standard has not been achieved after 3 years, the applicant will submit an alternative plan to the Corps.

2. To implement Reasonable and Prudent Measure #2 (excavation pollution control), the Corps shall ensure that a Pollution and Erosion Control Plan (PECP) is developed for the project to minimize or prevent, where applicable, point-source pollution related to excavation operations, containing all of the elements listed below, and complying with all applicable laws and regulations.
   a. Fuel, maintain and store heavy equipment as follows:
      i Place vehicle staging, maintenance, refueling, and fuel storage areas at least 150 feet horizontal distance from any stream, if possible. If not possible, ensure that no hazardous materials leak from equipment at storage site.
      ii Inspect all vehicles operated within 150 feet of any stream or water body daily for fluid leaks before leaving the vehicle staging area, or using the vehicle. Repair any leaks detected before the vehicle resumes operation.
      iii When not in use, store vehicles in the vehicle staging area to avoid contaminants entering waterway.
      iv. Describe hazardous products or materials that will be used, including procedures for storage, handling, and monitoring.
      v. Develop a spill containment and control plan with these components: Notification procedures; specific clean up and disposal instructions for products used at site; quick response containment and clean up measures; proposed methods for disposal of spilled materials; and employee training and knowledge of spill containment methods.
      vi. Any hazardous materials spill will be reported to NOAA Fisheries. In the event of a hazardous materials or petrochemical spill, immediate action shall be taken to recover toxic materials from further impacting aquatic or riparian resources.
      vii. In the event of a hazardous materials or petrochemical spill, a detailed description of the quantity, type, source, reason for the spill, and actions taken to recover materials will be documented. The documentation should include photographs.
   b. Prevent erosion and sedimentation associated with access roads, construction sites, equipment storage sites, fueling operations and staging areas, as follows:.
      i. The following erosion and pollution control materials must be on-site:
         a. A supply of erosion control materials (*e.g.*, silt fence and straw bales) must be on hand to respond to sediment emergencies. Sterile straw or hay bales will be used when available to prevent introduction of weeds.
         b. An oil absorbing, floating boom must be available on-site during all phases of construction. The boom must be of sufficient length to span the wetted channel.

c. All temporary erosion controls (*e.g.*, straw bales, silt fences) must be in place and appropriately installed downslope of relevant project work. Effective erosion control measures will be in-place at all times during the work, and will remain and be maintained until such time that permanent erosion control measures are effective.

3. To implement Reasonable and Prudent Measure #3 (OC coho salmon mortality, in-water work period, and proper fish handling methods), the Corps shall ensure that the work occurs within the proper in-water work window and that any fish capture and salvage will use proper fish handling techniques.
   a. All work will occur within the ODFW approved in-water work period of July 1-September 15 each year of the five-year term of the permit.
   b. Extensions of the in-water work period, including those for work outside the wetted perimeter of Palouse Creek, but below the ordinary high water mark, must be approved, in writing, by biologists from NOAA Fisheries.
   c. If during dredging operations in Palouse Creek or its drainage channels dead juvenile OC coho salmon are observed, excavation activities are to cease pending an assessment by ODFW to determine numbers and distribution of OC coho salmon within the work area. Assessment of presence of OC coho salmon must be done by ODFW using NOAA Fisheries approved collection and handling methods described below. Excavation activities may only resume after this assessment has determined numbers of fish present and risk to OC coho salmon. If numbers of OC coho salmon exceed those expected at this location and time of year, excavation must cease until alternate strategies can be developed. Numbers of OC coho salmon that will trigger the need for an assessment is one dead juvenile; 20 dead juvenile OC coho salmon terminates the project until alternate strategies can be developed.
   d. If the fish salvaging aspect of this project requires the use of seine equipment to capture fish, it must be accomplished as follows:
      i. Seining will be conducted by or under the supervision of a fishery biologist experienced in such efforts and all staff working with the seining operation must have the necessary knowledge, skills, and abilities to ensure the safe handling of all ESA-listed fish.
      ii. ESA-listed fish must be handled with extreme care and kept in water to the maximum extent possible during seining and transfer procedures. The transfer of ESA-listed fish must be conducted using a sanctuary net that holds water during transfer, whenever necessary to prevent the added stress of an out-of-water transfer.
      iii. Seined fish must be released as near as possible to capture sites.
      iv. The transfer of any ESA-listed fish from the applicant to third-parties other than NOAA Fisheries personnel requires written approval from NOAA Fisheries.

v. The applicant must obtain any other federal, state, and local permits and authorizations necessary for the conduct of the seining activities.

vi. The applicant must allow the NOAA Fisheries, or its designated representative, to accompany field personnel during the seining activity, and allow such representative to inspect the applicant's seining records and facilities.

vii. A description of any seine and release effort will be included in a post-project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions prior to and following placement and removal of barriers; the means of fish removal; the number of fish removed by species; the condition of all fish released, and any incidence of observed injury or mortality.

e. If fish salvaging requires the use of electrofishing equipment to capture fish, it must be accomplished as follows (NMFS 2000):

i. Electrofishing may not occur in the vicinity of listed adults in spawning condition or in the vicinity of redds containing eggs.

ii. Equipment must be in good working condition. Operators must go through the manufacturer's preseason checks, adhere to all provisions, and record major maintenance work in a log.

iii. A crew leader having at least 100 hours of electrofishing experience in the field using similar equipment must train the crew. The crew leader's experience must be documented and available for confirmation; such documentation may be in the form of a logbook. The training must occur before an inexperienced crew begins any electrofishing; it must also be conducted in waters that do not contain listed fish.

iv. Measure conductivity and set voltage as follows:

Conductivity (umhos/cm)	Voltage
Less than 100	900 to 1100
100 to 300	500 to 800
Greater than 300	150 to 400

v. Direct current (DC) must be used at all times.

vi. Each session must begin with pulse width and rate set to the minimum needed to capture fish. These settings should be gradually increased only to the point where fish are immobilized and captured. Start with pulse width of 500us and do not exceed 5 milliseconds. Pulse rate should start at 30Hz and work carefully upwards. In general, pulse rate should not exceed 40 Hz, to avoid unnecessary injury to the fish.

vii. The zone of potential fish injury is 0.5m from the anode. Care should be taken in shallow waters, undercut banks, or where fish can be concentrated because in such areas the fish are more likely to come into close contact with the anode.

viii. The monitoring area must be worked systematically, moving the anode continuously in a herringbone pattern through the water. Do not electrofish one area for an extended period.

ix. Crew must carefully observe the condition of the sampled fish. Dark bands on the body and longer recovery times are signs of injury or handling stress. When such signs are noted, the settings for the electrofishing unit may need adjusting. Sampling must be terminated if injuries occur or abnormally long recovery times persist.

x. Whenever possible, a block net must be placed below the area being sampled to capture stunned fish that may drift downstream.

xi. The electrofishing settings must be recorded in a logbook along with conductivity, temperature, and other variables affecting efficiency. These notes, together with observations on fish condition, will improve technique and form the basis for training new operators.

4. To implement Reasonable and Prudent Measure #4 (monitoring and reporting), the Corps shall ensure that:

a. Within 90 days of completing the project, the Corps will submit a monitoring report to NOAA Fisheries describing the success meeting their permit conditions. This report will consist of the following information:

i. Project identification.

a. Project name.

b. Starting and ending dates of work completed for this project.

c. The Corps contact person.

d. Monitoring reports shall be submitted to:
National Marine Fisheries Service (NOAA Fisheries)
Oregon State Branch, Habitat Conservation Division
Attn: 2001/01315-FEC
525 NE Oregon Street, Suite 500
Portland, Oregon 97232-2778

ii. Pollution and erosion control.
Copies of pollution and erosion control inspection reports, including descriptions of any failures experienced with erosion control measures, efforts made to correct them and a description of any accidental spills of hazardous materials.

iii. Site restoration.
Documentation of the following conditions:

a. Finished grade slopes and elevations

b. Planting composition, density, and success

c. A plan to inspect and, if necessary, replace failed planting for three years.

iv. A narrative assessment of the project's effects on natural stream function.

v. Photographic documentation of environmental conditions at the project site before, during and after project completion.

a. Photographs will include general project location views and close-ups showing details of the project area and project, including pre and post construction.
b. Each photograph will be labeled with the date, time, location, project name, the name of the photographer, and a comment describing the photograph's subject.

3. MAGNUSON - STEVENS ACT

3.1 Background

On April 24, 2001, NOAA Fisheries received a letter from the Corps requesting essential fish habitat (EFH) consultation for the subject action pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR 600). After several site visits and discussions with the Corps and the applicants, NOAA Fisheries indicated to the Corps on February 15, 2002, that consultation could not be completed until additional information was provided. The Corps provided the requested information on May 16, 2002, at which time NOAA Fisheries considered the information provided to be sufficient to initiate consultation on that date. The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action.

3.2 Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat, "waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50CFR600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH.
- NOAA Fisheries shall provide conservation recommendations for any federal or state activity that may adversely affect EFH.
- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.3 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California.. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (200 miles) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable manmade barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*e.g.*, natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

Detailed descriptions and identifications of EFH for the groundfish species are found in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to The Pacific Coast Groundfish Management Plan (PFMC 1998a) and the NOAA Fisheries Essential Fish Habitat for West Coast Groundfish Appendix (Casillas *et al.* 1998). Detailed descriptions and identifications of EFH for the coastal pelagic species are found in Amendment 8 to the Coastal Pelagic Species Fishery Management Plan (PFMC 1998b). Detailed descriptions and

identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

3.4 Proposed Actions

The proposed actions are detailed in section 1.2. The action area is defined as Palouse Creek from the tide gate at its lower end to a point upstream 2.1 miles. This area has been designated as EFH for various life stages of numerous groundfish, coastal pelagic fish, and salmon species (Table 1).

3.5 Effects of Proposed Action

As described in detail in section 1.5, the proposed activities may result in detrimental short- and long-term adverse effects to a variety of habitat parameters. These impacts include:

1. Dredging of instream material will expose species present in the channel to elevated turbidity. An increase in turbidity can harm fish and filter-feeding macro-invertebrates. Effects from excavator dredging are expected to be short lived and transitory, with sediment settling out within 100 feet of the activity due to low gradient and low flows at the time of dredging.

2. Removal of sediments during dredging will similarly remove resident benthic invertebrates from the area dredged. Based on studies, recolonization is likely within a period of several months following the disturbance (Nightingale and Simenstad 2001, McCabe *et al*. 1998).

3. As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. The relatively minor use of equipment (one excavator) and application of above described prevention measures should minimize potential release of contaminants.

3.6 Conclusion

NOAA Fisheries believes that the proposed action may adversely affect the EFH for the groundfish, coastal pelagic, and Pacific salmon species listed in Table 1.

3.7 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The conservation measures proposed for the project by the Corps, all conservation recommendations outlined above in section 1.7, and all of the reasonable and prudent measures and the terms and conditions contained in sections 2.2 and 2.3 are applicable to salmon EFH. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

3.8 Statutory Response Requirement

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.9 Supplemental Consultation

The Corps must reinitiate EFH consultation with NOAA Fisheries if either the action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion.

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Table 1. Species with designated EFH found in waters of the State of Oregon.

Ground Fish Species	Blue rockfish (*S. mystinus*)	Rougheye rockfish (*S. aleutianus*)	Flathead sole (*Hippoglossoides elassodon*)
Leopard shark (*Triakis semifasciata*)	Bocaccio (*S. paucispinis*)	Sharpchin rockfish (*S. zacentrus*)	Pacific sanddab (*Citharichthys sordidus*)
Soupfin shark (*Galeorhinus zyopterus*)	Brown rockfish (*S. auriculatus*)	Shortbelly rockfish (*S. jordani*)	Petrale sole (*Eopsetta jordani*)
Spiny dogfish (*Squalus acanthias*)	Canary rockfish (*S. pinniger*)	Shortraker rockfish (*S. borealis*)	Rex sole (*Glyptocephalus zachirus*)
Big skate (*Raja binoculata*)	Chilipepper (*S. goodei*)	Silvergray rockfish (*S. brevispinus*)	Rock sole (*Lepidopsetta bilineata*)
California skate (*R. inornata*)	China rockfish (*S. nebulosus*)	Speckled rockfish (*S. ovalis*)	Sand sole (*Psettichthys melanostictus*)
Longnose skate (*R. rhina*)	Copper rockfish (*S. caurinus*)	Splitnose rockfish (*S. diploproa*)	Starry flounder (*Platyichthys stellatus*)
Ratfish (*Hydrolagus colliei*)	Darkblotched rockfish (*S. crameri*)	Stripetail rockfish (*S. saxicola*)	
Pacific rattail (*Coryphaenoides acrolepsis*)	Grass rockfish (*S. rastrelliger*)	Tiger rockfish (*S. nigrocinctus*)	**Coastal Pelagic Species**
Lingcod (*Ophiodon elongatus*)	Greenspotted rockfish (*S. chlorostictus*)	Vermillion rockfish (*S. miniatus*)	Northern anchovy (*Engraulis mordax*)
Cabezon (*Scorpaenichthys marmoratus*)	Greenstriped rockfish (*S. elongatus*)	Widow Rockfish (*S. entomelas*)	Pacific sardine (*Sardinops sagax*)
Kelp greenling (*Hexagrammos decagrammus*)	Longspine thornyhead (*Sebastolobus altivelis*)	Yelloweye rockfish (*S. ruberrimus*)	Pacific mackerel (*Scomber japonicus*)
Pacific cod (*Gadus macrocephalus*)	Shortspine thornyhead (*Sebastolobus alascanus*)	Yellowmouth rockfish (*S. reedi*)	Jack mackerel (*Trachurus symmetricus*)
Pacific whiting (Hake) (*Merluccius productus*)	Pacific Ocean perch (*S. alutus*)	Yellowtail rockfish (*S. flavidus*)	Market squid (*Loligo opalescens*)
Sablefish (*Anoplopoma fimbria*)	Quillback rockfish (*S. maliger*)	Arrowtooth flounder (*Atheresthes stomias*)	
Aurora rockfish (*Sebastes aurora*)	Redbanded rockfish (*S. babcocki*)	Butter sole (*Isopsetta isolepsis*)	**Salmon**
Bank Rockfish (*S. rufus*)	Redstripe rockfish (*S. proriger*)	Curlfin sole (*Pleuronichthys decurrens*)	Coho salmon (*O. kisutch*)
Black rockfish (*S. melanops*)	Rosethorn rockfish (*S . helvomaculatus*)	Dover sole (*Microstomus pacificus*)	Chinook salmon (*O. tshawytscha*)
Blackgill rockfish (*S. melanostomus*)	Rosy rockfish (*S. rosaceus*)	English sole (*Parophrys vetulus*)	

From Casillas *et al* 1998, Eschmeyer *et al.* 1983, Miller and Lea 1972, Monaco *et al.* 1990, Emmett *et al.* 1991, Turner and Sexsmith 1967, Roedel 1953, Phillips 1957, Roedel 1948, Phillips 1964, Fields 1965, Walford 1931, Gotshall 1977, Hart 1973, Healey 1991, Sandercock 1991, and Dees 1961.